

Notes on our Hepaticæ. IV.

The genus *Fossombronia*.

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Among the genera of the Jungermaniales the present genus is perhaps the only one in which the spore markings have been used as specific characters. The older hepaticologists failing to recognize these important characters failed in many instances to discriminate the species and in many of the earlier exsiccatae the same name covers two or three species which are now clearly recognized by spore characters. Our own species have been indiscriminately referred to common European species and as this was done before the right recognition of species obtained there, we have a complicated tangle of misapplied names to unravel.

In order of sequence the following species have been referred to our flora by various authors.

1821. Schweinitz described¹ *Anthoceros jungermannioides* which is evidently a species of *Fossombronia* as first pointed out by Sullivant in 1845. While it probably represented *F. foveolata*, our most common species, there is no means at hand of verifying the supposition.

1845. Sullivant distributed² *Fossombronia pusilla*, from Mobile, Ala. As his specimens, at least in my set of the Musci Alleghanienses, are sterile, it is not possible to determine with certainty what species this is, the foliar characters not being sufficiently distinct to discriminate species properly.

1856. Sullivant again reported³ *F. pusilla* from "moist places on the ground; mostly southern." His figure (the same that now appears in the sixth edition of Gray's Manual) does not even approximately represent the spores of any of our species. It is reasonably certain, however, that the species he has figured is really *F. foveolata*.

1869. Austin published⁴ *F. cristula* from New Jersey and

¹ Spec. Fl. Am. Sept. 25. 1821.

² Musc. Alleg. no. 277. 1845.

³ Mosses and Hepaticæ of the Eastern U. S. in Gray, Man. 691. 1856. (ed. 2.)

⁴ Proc. Phila. Acad. 1869; 228. 1869.

Androcryphia longiseta from California and Texas, giving *F. longiseta* Aust. MS. as a synonym for the latter.

1872. Austin issued four species⁵ as follows: *F. longiseta* no. 118, *F. angulosa*, no. 119, *F. pusilla*, no. 120, and *F. cristula*, no. 121.

1875. Lindberg in commenting on Austin's exsiccatae⁶ recognizes nos. 118 and 121 as good species, the former allied to *F. cristata* and the latter to *F. foveolata* of Europe. With no. 118, he says, a second species occurs (the Texas specimens) which he briefly characterizes under a name (*F. Texana* Lindb. MS.). No. 119 he asserts is not *F. angulosa* as known in Europe, and he briefly characterizes the sterile specimens under the MS. name of *F. salina* Lindb. No. 120 he refers doubtfully to *F. foveolata* but later⁷ refers it to this species with more positiveness.

1876. Austin described⁸ *F. Macouni* from Canada (Portage La Loche, lat. 57°), and *F. Wrightii* from Cuba (the latter based on material distributed later in Hep. Cubenses Wrightianæ as "*F. pusilla*"), and briefly characterized the Texan specimens (originally included in *F. longiseta* and named *F. Texana* by Lindberg) under the name of *F. Cubana* (Gott.) Aust., including with them material collected in Cuba by Charles Wright which had been named by Gottsche and were afterwards distributed in Hep. Cubenses Wrightianæ as "*F. pusilla*, var. *Cubana* G."

The above species represent all the material that was known to me when the compilation was made for my descriptive catalogue of species.⁹ It is fair to state that at the time of publication of that paper Lindberg's publication noted above was not known to me.

1889. Underwood and Cook issued¹⁰ specimens of *F. Dumortieri*¹¹ as no. 47. This species had previously been cited

⁵ Hepaticæ Boreali-Americanæ.

⁶ Hepaticæ in Hiberniæ lectæ. Acta Soc. Scien. Fenn. 10: 533. 1875.

⁷ Rev. Bryol. 12: 39. 1885.

⁸ Bot. Bulletin (now Bot. Gazette) 1: 36. 1876.

⁹ Bull. Ill. State Lab. Nat. Hist. 2: 1-133. 1884.

¹⁰ Hepaticæ Americanæ, dec. V-VI. N 1889.

¹¹ The name of this species here given cannot stand under the present rules of nomenclature as it was based on a *nomen nudum* and that issued in exsiccatae. Lindberg's original name, therefore, must hold. The synonymy of the species is as follows:

Fossombronia foveolata Lindb. 1873.

Codonia Dumortieri Hueb. et Genth. Deutschlands Lebermoose in getrockneten Exemplaren no. 80. 1837; name only.

Fossombronia Dumortieri Lindb. Not. pro F. et Fl. Fenn. 13: 417. 1874.

as American by Lindberg (Drummond, Musc. Amer. II. no. 163 from Louisiana).

1892. Underwood reported¹² *F. cristata* from Indiana.

From a study of the herbarium material at hand we appear to have the following species:

1. *F. ANGULOSA* (Dicks.) Raddi. Mem. della Soc. Ital. di Mod. **18**: 40. 1818.

Cuba, *Wright*; Florida, *Underwood*; Alabama, *Underwood*; Texas, *Thurrow*. The specimens issued in Hep. Amer. no. 118 differ from representative European specimens in shorter elaters and slightly larger spores, in both particulars varying in the direction of *F. foveolata*. They are apparently dioicous.

2. *F. CRISTATA* Lindb. "apud Soc. pro F. et Fl. fenn. die 6th Dec. 1873" Not. pro F. et Fl. fenn. **13**: 388. 1874.¹³

Indiana, *Underwood*; Ohio, *Werner*.

3. *F. CRISTULA* Aust. Proc. Phila. Acad. **1869**: 228. 1869. New Jersey, *Austin*; Distributed in Hep. Bor.-Am. no. 121.

4. *F. FOVEOLATA* Lindb. "apud Soc. pro F. et Fl. fenn. die 6 Dec. 1873." Not. pro F. et Fl. fenn. **13**: 382. 1874.¹³

Maine, *Rand*; New Jersey, *Austin*; Delaware, *Commons*, *James*; Ontario, *Macoun*, *Britton*; British Columbia, *Macoun*. Sterile specimens from South Carolina, *Ravenel*, seem also to belong here as is also the case with various similar specimens in exsiccatae.¹⁴ Distributed in Hep. Amer. as *F. Dumortieri*, no. 47.

5. *F. LONGISETA* Aust. *as syn.* Proc. Phila. Acad. **1869**: 228. 1869.

Androcryphia longiseta Aust. l. c.

California, *Bolander*, *Brandeggee*, *Farlow*, *Parish*, *Howe*. Distributed in Hep. Bor.-Am. no. 118, and in Hep. Amer. no. 157.

6. *F. TEXANA* Lindb. Acta Soc. Scien. fenn. **10**: 533. 1875.

¹² Proc. Ind. Acad. Science **1891**: 90. 1892.

¹³ I have been unable to verify the earlier citations of Lindberg. The species are described in the second paper cited, with illustrations of the spores.

¹⁴ E. g., Musc. Alleg. no. 277. Hep. Bor.-Am. no. 120. Canadian Hepat. no. 64.

F. Cubana (Gott.) Aust. Bot. Bulletin (now Bot. Gazette) 1: 36. 1876.

F. pusilla, var. *Cubana* Gott., name only, in Hep. Cubenses Wrightianæ.

Cuba, *Wright*; Austin also reported it from Texas but I have no means of verifying the reference.

7. *F. WRIGHTII* Aust. Bot. Bulletin (now Bot. Gazette) 1: 36. 1876.

Cuba, *Wright*.

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8. *F. PUSILLA* (L.) Dumort. Recueil d'obs. sur les Jung. 11. 1835.¹⁵

This species so often alluded to in the above references must be placed in the doubtful list as we are unable to cite a single fertile plant from any part of North America.

9. *F. SALINA* Lindb. Acta Soc. Scien. fenn. 10: 533. 1875.

F. angulosa Aust. Hep. Bor.-Am. no. 119, not Raddi.

This species founded on sterile specimens will have to be placed in the doubtful list unless fertile specimens can be found. It is unfortunate that it was ever given a name!

10. *F. MACOUNI* Aust. Bot. Bulletin (now Bot. Gazette) 1: 36. 1876.

"Portage La Lochs, lat. 57°, Macoun." I have seen no specimens of this species. Mr. Pearson writes me that no specimens exist in either of the parts of the Austin collection; nor does Mr. Macoun, its collector, possess any specimens.

In order to facilitate the determination of our species I append the following table with the more important characters emphasized.

**Spores clearly foveolate or reticulate.*

Elaters few or wanting; spores pale brown, 35-44 μ ;
paroicous *F. cristula*.

Elaters abundant; spores dark brown.

Dioicous; spores 35-40 with few reticulations;
elaters 220-250 μ *F. angulosa*.

Heteroicous; spores 42-50 μ with more numerous
reticulations; elaters 120-135 μ . . . *F. foveolata*.

¹⁵ Dumortier clearly intended to write "pusilla" at this reference, but by a singular typographical error he wrote "pumila" which happens to be also one of the species of the Linnaean genus *Jungermania*.

***Spores spinulose-cristate, the crests only occasionally anastomosing.*

Dioicous.

Spores 29–40 μ ; elaters 160–300 μ . . . *F. longiseta*.

Spores 50–60 μ ; elaters 135–200 μ . . . *F. Texana*.

Heteroicous; spores 29–40 μ ; elaters about 120 μ .

F. cristata.

****Spores verrucose, 53–56 μ ; dioicous?* . . . *F. Wrightii*.

Having never seen *F. Macouni* I can only quote Austin's description of its spores: "*Sporis parviusculis subopacis densissime minutissime papillosis.*" It would doubtless fall in the table near *F. Wrightii*.

It is hoped that collectors will send in material illustrating more fully the distribution of this interesting genus. The species all grow in sandy or clayey soil, closely creeping, and for the most part produce their spores late in the season. I desire also that those who possess either Austin's Hep. Bor. Am. or Sullivant's Musc. Alleg. examine the species above noted for spores and report any modifications necessary in the statements. The spores of the European species have been figured in accessible works, *e. g.* Not. pro Fl. et Faun. Fenn **13**: pl. 1. and Rev. Bryol. **17**: pl. 1. These include *Ff. angulosa*, *foveolata*, *cristata*, and *pusilla* besides other species not found in America.

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